

at least six-and-twenty years of study of the vegetation of the island. The necessity even now of being absent from England during the early part of each year is one cause of the small progress made with his Flora; but another is the great care and caution exercised in the preparation of every part of it.

This instalment is of less interest to the English botanist than its predecessors. It treats chiefly of plants belonging to a southern type—*Myrtaceæ*, *Cucurbitaceæ*, *Mesembrianthemaceæ*, *Cactaceæ*; and even when the orders are those of plants which inhabit Western Europe, the species are usually different. This was not so much the case in the former, and apparently will be less so in future Parts. The elaborate account of the *Cucurbitaceæ* will be read with much interest and advantage; the account of the *Cacti* also is valuable. But it is impossible to open the book without seeing proofs of the accuracy and care of its author.

There are not many new species introduced; for most of those found by Mr. Lowe were already described in his 'Primitiæ et Novitiæ;' but in several instances he now furnishes valuable additional information concerning them: as an example, let the reader turn to the revised and amplified account of the magnificent *Monizia edulis* (pp. 365, 366).

Happily in this case we can dispense with the recognized privilege of reviewers, and make only one complaint,—viz. against the very slow rate of publication. We fear that this delay in the issue of the Parts is unavoidable; for Mr. Lowe has now again started for a southern climate.

We sincerely hope that our recommendation of this book will lead an extensive sale. No student of the botany of South-western, or even Western, Europe ought to be without it.

PROCEEDINGS OF LEARNED SOCIETIES.

ZOOLOGICAL SOCIETY.

May 26th, 1863.—Dr. J. E. Gray, F.R.S., in the Chair.

ON THE SPECIES OF THE GENUS *STERNOTHÆRUS*, WITH SOME OBSERVATIONS ON *KINIXYS*. BY DR. J. E. GRAY, F.R.S., ETC.

The shell or thorax of the *Sternothæri* offer such different appearances, according to the age or other special conditions under which they have lived, that it is almost impossible to distinguish them; and the more specimens are received, the greater becomes the difficulty. Under these circumstances, as the heads seem to present some characters which, as far as I have been able to observe them in the limited number of specimens which come under my examination, seem permanent, I have attempted to define the peculiarities presented by the heads of the specimens in the Museum Collection from different localities. The species were so difficult to distinguish by means of the shell only, that, in my 'Catalogue of

Shield Reptiles in the British Museum,' I stated that all the species there noticed "perhaps may prove only to be varieties of the same species, or dependent on age" (p. 52).

A larger series of specimens from the same locality has shown that such characters as the shape and thickness of the shields, and especially of the first vertebral shield, which have been hitherto to some extent depended on for the separation of the species, are very variable. Therefore the discovery of some other more permanent characters seems important; and the form and disposition of the shields on the head appear to furnish such characters.

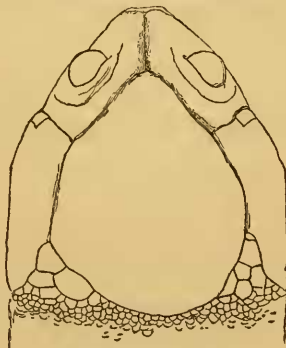
Mr. Cope observes that *S. Derbyanus* differs from *S. sinuatus* of Smith "mainly in the form of the upper mandible, which is obtusely hooked in the former, bidentate in the latter." I suspect he must have been misled in these observations by figures or descriptions; for the jaws of the typical specimens of the two species are very similar.

It will be necessary to separate the genus into three sections, according to the form of the head, premising that I only know the species belonging to the third section from the descriptions of MM. Duméril and Bibron, as all the specimens that have come under my observation belong to the first or second section. These sections may be thus characterized :—

I. *Head short and broad; the upper jaw obscurely notched and bidentate in front; the crown shielded to a line even with the back of the tympanum.* Tanoa.

1. STERNOTHÆRUS SINUATUS, A. Smith, S. African Zool. t.

Head rather broad, depressed; jaws pale; the temporal plate



Head of *S. sinuatus*.

broad and short, only reaching to the front of the tympanum, and with another rather smaller similar plate behind it over the ear; the hinder vertebral plate of the adult as wide as long, not tubercular; the fore legs with small scales, and with some very wide, slender, band-like shields on the inner side of the upper surface; the sternum with a narrow deep notch behind.

Sternothærus castaneus, part.; Gray, Cat. Shield Rept. B.M. p. 52.

Hab. S. Africa: Natal (*Dr. Krauss*).

In other specimens the front marginal shields are rather wide, the middle one as long as broad; the front vertebral shield is elongate, with straight sides.

I think it better to retain the name given by Dr. Andrew Smith to the Natal specimen for this species; for it is very doubtful to which of the specimens the *Emys castanea* of Schweigger is referable, and one of the specimens I described as *S. castaneus* is certainly *S. Derbianus*.

2. STERNOTHÆRUS DERBIANUS.

Pentonyx gaboonensis, A. Duméril, Arch. du Mus. x. p. 164, t. 23. f. 2 (young).

The head very broad, depressed; jaw dark, black-lined; the temporal plate single, broad and long, reaching to the back of the tympanum; the upper surface of the front leg with moderate-sized scales, and with many larger, convex band scales on the inner side; the hinder edge of the fourth and the upper edge of the fifth vertebral plate tubercular; the sternum with a deep rounded notch behind; the vertebral plate of the adult longer than broad.

Hab. W. Africa: Gaboon; Sierra Leone.

Our specimens offer several varieties, thus:—

1. Front marginal plates thick, convex, broader than long; the front vertebral shield elongate urn-shaped.

2. Front marginal plates as long as broad, flat; the front vertebral shield elongate urn-shaped.

3. Front marginal plates as long as broad, flat; the front vertebral shields elongate, with straight sides.

In one specimen of the first variety the vertebral shields are much narrower than in the other.

The shield on the crown of the head in the two specimens which have heads is more or less perfectly divided into three shields, viz. one frontal and two occipital, but together they cover the whole top of the head to a line with the back of the ears, and there are only a few small shields between the hinder side of the hinder part of it and the back edge of the temporal shields.

I think there can be very little doubt that the specimen which M. Aubrey Lecomte sent to the Paris Museum from the Gaboon, and which M. Auguste Duméril, in his very hasty and very incomplete and inaccurate paper "On the Reptiles of Western Africa," in the 'Archives du Muséum' (vol. x. p. 165), has described and figured under the name of *Pentonyx gaboonensis*, is only the young state of this species. One is surprised that a herpetologist who must have unrivalled opportunities of study should not have been led by the breadth of the lobes of the sternum to doubt its being a *Pentonyx*. However, it is well, as it gives their museum a representative of a species which they did not formerly possess. But, what is more extraordinary still, M. A. Duméril, who is so ready with and so bitter in his observations on the works of others, though his figure shows that the horny plates consist almost entirely of the areolæ of the large shields, with only two or three rings of deposit round

them, showing that the animal could not long have been hatched, yet observes, "L'aspect de la carapace et sa solidité comparée à celle de la boîte osseuse de jeunes *Pentonyx* du Cap semblent prouver que notre individu est adulte" (p. 164). The example figured must be that on which this observation is founded; for he remarks, "Il est unique dans la collection."

It is probable that *Emys Adansonii* of Schweigger, the *Pentonyx*, and more lately the *Sternothærus Adansonii* of Duméril and Bibron, described from a shell in the Paris Museum said to come from the Cape de Verd, is only a half-grown specimen of this species, which is the only *Sternothærus* I have seen from Western Africa.

The specimen in the British Museum from Sierra Leone, which is described in the 'Catalogue of Shield Reptiles' (p. 52) as *Sternothærus castaneus*, appears to belong to this species.

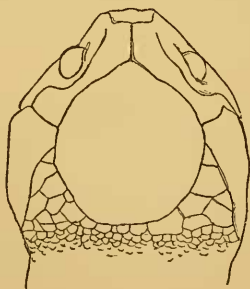
- II. *The head rather short and broad; the upper jaw truncated; the crown covered with an oblong shield (or three smaller shields), with a number of smaller shields over the tympanum, between the hinder outer edge of the crown-plate and the upper edge of the large temporal shields. Notoa.*

STERNOTHÆRUS SUBNIGER.

S. castaneus, Dum. et Bibr. Erp. Gén. ii. p. 401, t. 20. f. 1.

Head depressed; jaws pale; the upper surface of the fore legs with small scales, and a few rather larger ones on the inner sides.

Hab. Madagascar.



Head of *S. subniger*.

The specimen in the British Museum, which was received from Paris under the above name, and as coming from Madagascar, agrees well with Duméril and Bibron's description and figure; but they do not describe the small shields on the head, and especially say that the frontal plate is much developed, and that there are no occipital plates. Now, in our specimen the sutures of the occipital plates are well seen, and they are peculiar for being oblong and obliquely placed (so as to leave the sides of the occiput to be covered with small shields), instead of being large and trigonal (as they are in the two other species) and covering all the space on the head to the margin of the temporal shields.

III. "Head elongate; upper jaw with a recurved crown, with a moderate beak; frontal, two long nasal, and two large parietal plates." Anota.

STERNOTHÆRUS NIGER, Dum. et Bibr. Erp. Gén. ii. p. 597 (not t. 20. f. 1, as quoted).

Hab. Madagascar.

We have recently received from Western Africa several specimens of the genus *Kinixys*, and they all tend to prove the distinctness of the three species in the 'Catalogue of Shield Reptiles in the British Museum,' viz. 1. *K. Belliana*; 2. *K. erosa*; and 3. *K. Homeana*. *K. Belliana* is easily separated from *K. erosa* (as well as by other characters) by the small size of the gular plates. It would appear that this species is common both to West and Eastern Africa, as Mr. Whitfield brought it from the Gambia, Dr. Peters found it in Mozambique, and Dr. Rüppell at Shoa: so also is *K. Homeana*; for Lieut. Friend found it at Cape Coast in West Africa, and Mr. Berthold on the east coast of Africa.

The *K. erosa* seems to be common in several parts of West Africa. It is abundant at the Gaboon, and seemingly not uncommon at the Gambia. It is a very variable species, but always to be distinguished by the reflexed and strongly dentated posterior margin, and the large size of the gular plates. It varies in form. Some specimens are oblong-elongate, narrow, as wide before as behind (that is to say, straight on the sides): these, as the older specimens have the sternum concave, which we generally consider the peculiarity of the male sex, are probably male. Others are ovate, much broader compared with their length, and broader behind than before, and the sides of the back are more convex: these are probably the shells of females. The specimens of both these shapes are varied with yellow on the upper side of the costal plates, and have short irregular yellow rays at the outer angle of the costal and vertebral shields; but the distinctness of these coloured rays varies in the different specimens. The form of the gular plates also varies; they are always rather large, and the front outer angles are rather produced forward, leaving a deep angular notch; but in one specimen, which has a concave sternum, and is probably an old male, they are very much enlarged, and produced beyond the upper edge of the thorax. They are longer than broad, and truncated in front, so as to present a straight margin without any notch, they are as long as the humeral plate at the inner side, and the front margin of them is as broad as the length of the outer side, which is concavely curved out. There seems, from M. Auguste Duméril's figure, to be only a thorax, without any sternum, of this species in the Paris Museum.

The most natural division of this genus is the following:—

- A. The front lobe of the sternum narrowed and tapering in front, with a small truncated pair of gular shields; the sides of the margin even; nuchal shield distinct. *Kinothorax*.

KINIXYS BELLIANA.

B. The front lobe of the sternum broad ; side curved outwards, with a large pair of gular shields produced at the outer angles ; the sides and the margin strongly dentated. *Kinixys*.

1. *KINIXYS EROSA*. The fifth vertebral plate rounded ; nuchal none.

2. *KINIXYS HOMEANA*. The fifth vertebral plate produced, angular ; nuchal plate distinct.

ON THE ARRANGEMENT OF THE CETACEANS.

BY DR. JOHN EDWARD GRAY, F.R.S., ETC.

In the part of the 'Zoology of the Erebus and Terror' devoted to the Cetacea I collected together all the materials within my reach, and published an arrangement of the genera, and notes on all the species, of these animals which were then known to me, either from the examination of the specimens in different museums, or from the descriptions and observations in various zoological and whaling works. The first part of the 'Catalogue of the Specimens of Mammalia in the Collection of the British Museum,' which is devoted to the Cetacea (published in 1850), may be considered as a revision of the former essay, with the additional material that I had been able to collect since it had been penned. During the thirteen years that have elapsed since the publication of the Catalogue, I have not allowed any opportunity to escape of examining and comparing the different specimens which have come under my observation, and I have read with care all the papers and works that I have been able to meet with bearing in any way on Whales and their allies. I am now induced to lay the results, as far as the general arrangement of the order is concerned, before the Society.

Some zoologists pay little regard to such re-arrangements of genera and the division of them into groups ; but this arises from the points of view from which they regard them. If they look on them as only artificial keys to discover the name of a genus, and thus arrive at the name of a species, and if that is the object of the person who forms them, then they are perhaps estimated at their right value. But I have laboured at these and other arrangements which I have suggested with a very different view. If it is considered desirable to place the species in natural groups called genera, it is certainly equally desirable that the genera so formed should be disposed in the larger and larger groups in such an order as appears to the writer most distinctly to exhibit the natural relations which the genera bear to each other. If they are so disposed, then the name that is given to a group of species is of little importance, as to whether the group is called a genus or subgenus, a genus or subfamily, or a family. They may be so regarded at the caprice or theory of the student, as, whatever may be their nominal value, they are intended to represent a natural group of species, arranged together so as best to represent, according to the writer's view, the natural relation of the species to each other.